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ABSTRACT

This technical report describes the development of the College-Level Academic Skills Test (CLAST), an instrument designed to measure Florida college students' achievement of the computation and communication skills expected by the completion of their sophomore year. Section I covers CLAST's background and purpose, the requirement that all students seeking an associate in arts degree or upper-division university status take CLAST, the use of CLAST scores, and the test administration plan. Section II traces the development of CLAST, explaining the process of identifying and validating essential academic skills; the identification and review of existing tests; test and test item specifications; and the process used in item development, review, and analysis. Descriptions of CLAST and its computation, reading, writing, and essay subtests are provided in section III. Section IV explains the development of CLAST forms, focusing on procedures related to the item bank development, test assembly, test instructions, quality control, and test analysis. After section V assesses CLAST's validity, section VI reviews technical aspects of CLAST's development, including calibration methods, generation of ability estimates, test equating, score reliability, item bias prevention, and item analysis. Section VII explains scoring and reporting procedures, and section VIII summarizes 1982-83 CLAST administration results. Appendices present a glossary, relevant laws, skills assessed, project members, and CLAST item review forms. (LAL)

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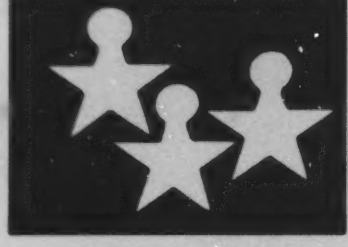
CLAST

COLLEGE LEVEL ACADEMIC SKILLS TEST



TECHNICAL REPORT
1982-83

JC 840 057

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College-Level Academic Skills Test

Technical Report

1982-83

College-Level Adacemic Skills Project
Office of Deputy Commissioner for Special Programs
Department of Education
Tallahassee, Florida 32301

FLORIDA: A STATE OF EDUCATIONAL DISTINCTION. "On a statewide average, educational achievement in the State of Florida will equal that of the upper quartile of states within five years, as indicated by commonly accepted criteria of attainment." Adopted, State Board of Education, Jan. 20, 1981

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OVERVIEW

The College-Level Academic Skills Test (CLAST) has been developed as a part of an overall effort in the State of Florida to ensure that students have achieved the skills expected of them before they move from one level of education to the next. It is the particular function of CLAST to determine the extent to which college students have achieved the communication and computation skills expected of all students by the completion of their sophomore year.

In 1979, the Florida Legislature in Chapter 79-222, Laws of Florida, charged the Department of Education (DOE) with responsibility for maintaining a list of communication and computation skills associated with successful student performance to the baccalaureate. The same legislation made the State Board of Education responsible for (1) approving the list of communication and computation skills, (2) approving tests to measure achievement of those skills, and (3) setting performance standards.

The Department of Education, through the Articulation Coordinating Committee, established the College-Level Academic Skills Project as a cooperative activity of faculty members from community colleges and state universities to identify and validate the skills and to identify tests which could be used to measure the skills. A faculty member served as the project director, working as an adjunct to the staff of the Deputy Commissioner for Special Programs.

In 1982, the Legislature in Chapter 82-180, Laws of Florida, directed the Department of Education to develop a test to measure student achievement of the college-level communication and computation skills. That legislation required the use of scores on the test as a condition of eligibility for the award of either an associate of arts degree or admission to upper division status in a state university. The College-Level Academic Skills Test is the test which the Department of Education has developed in response to that legislation.

Appendix B contains copies of statutes and rules which are applicable to the CLAST requirement.

Purpose of CLAST

The College-Level Academic Skills Test has been designed as an achievement test. It is intended to measure the level of achievement of the communication and computation skills which are expected of all students by the time they complete their sophomore year in college, i.e., those which are listed in State Board of Education Rule 6A-10.31, FAC.

Each of the four subtests of CLAST--computation, reading, writing, and essay--has been designed to yield a single score which is a valid and reliable estimate of the achievement by individual examinees of the group of skills measured in that subtest.

While it is presumed that CLAST scores relate positively to other measures of academic performance, both prior to and after the test has been taken, CLAST does not purport to be a predictor of subsequent performance of examinees in upper division programs, nor is the test designed to yield skill by skill information needed for full diagnosis of the problems of individual examinees.

Requirement to Take CLAST

Beginning in October, 1982, any student enrolled in a public community college or university in Florida who falls into one of these categories is required to take CLAST: (1) community college or university student completing the Associate of Arts degree, (2) community college or university student seeking admission to upper division, (3) student enrolled in a state university under the provisions of Rule 6A-10.314(5), FAC.

To be eligible to take CLAST during any given term, an individual must make application to take the test on or before the deadline established for that administration and must fall into one of the categories of eligibility.

Use of CLAST Scores

The use of CLAST scores is governed by Florida Statutes and the State Board of Education. Scores are required for the award of an Associate of Arts degree by a community college or state university and for the admission of students to upper division status in a state university in Florida. Beyond establishing eligibility for those awards, use of CLAST scores prior to August 1, 1984, is limited to student counseling and curriculum improvement.

Under current requirements of law, effective August 1, 1984, no Associate of Arts degree can be awarded to any student whose scores on CLAST do not satisfy minimum standards which are yet to be set by the State Board of Education. For any term which begins after August 1, 1984, no student can be admitted to upper division status in a state university who does not have

CLAST scores which satisfy the minimum standards of the State Board. Students enrolled in a state university under the provisions of Rule 6A-10.314(5), FAC, must present scores on CLAST which satisfy the minimum standards of the State Board during the first term of enrollment.

Test Administration Plan

Under provisions of Section 229.551(3)(k), Florida Statutes, the Commissioner of Education retains responsibility for the administration of CLAST.

A plan for the administration of CLAST during the 1982-83 academic year was issued by the Commissioner in April, 1982. The plan was developed by the Department of Education after consultation with community college and university personnel. Under the plan, responsibility for the administration of CLAST was established at three levels, viz., the Department of Education through the CLASP Office, the Statewide Test Administrator to which administrative responsibilites are assigned, and the community colleges and state universities which administer the test to eligible students. The Office of Instructional Resources of the University of Florida was selected for assignment of statewide administrative responsibilities for CLAST.

The test administration plan details the responsibilities of the CLASP Office, the Statewide Test Administrator, and the local institution. It also describes the policies and procedures under which the testing program operates. The Test Administration Manual, which is made a part of the plan, gives additional specific information to assist institutional personnel in carrying out their responsibilities.

DEVELOPMENT OF CLAST

The initial test development process began with the identification of the skills to be assessed and culminated with the test administration in October, 1982. This section of the technical report provides detailed information about each of the major steps in the development of CLAST. A calendar of major events in test development is included below.

CALENDAR OF KEY EVENTS IN THE DEVELOPMENT OF THE COLLEGE-LEVEL ACADEMIC SKILLS TEST

FS 79-222 Enacted, Requiring Identification of Skills	Spring 1979
EAST (now CLASP) Established	August 1979
Identification and Validation of the Skills	1980
Task Force Report	December 1980
Test Search	1981
SBE Adopted Rule, 6A-10.31-.314, FAC Listing the Skills and Establishing the Test Requirement.	September 1981
Development of Test and Item Specifications	April-November 1981
Review of Item Specifications	November 1981
Refinement of Item Specifications	December 1981
Development of Test Administration Plan	January-April 1982
Development of Items by Contractors	January-April 1982
DOE Review of Items	February, March 1982
Field Test of Items	June 1-4, 1982
Analysis of Field Test Data	June-July 1982
Development of First Form of CLAST	July-August 1982
Administrations of CLAST 1982-83	October 23, 1982 March 19, 1983 June 4, 1983

SA 4/5

Identification and Validation of Skills

The Articulating Coordinating Committee, charged by the Department of Education with the task of implementing that part of the legislation dealing with identification of skills and tests to measure achievement of those skills, established the Essential Academic Skills Project (now the College-Level Academic Skills Project) in August, 1979. The project accomplished its goals utilizing the Executive Committee for the Project, the Project Director, State Level Task Forces on Communications and Computations, and the Standing Committee on Student Achievement. Members of these groups are identified in Appendix D.

To generate the list of skills, the State Level Task Forces, together with the Project Director and other project personnel acting in an advisory capacity, worked through a series of meetings from January to November of 1980. Members interacted with institutional-level task forces, which had been established to involve faculty members in Florida's public universities and community colleges in the identification of the skills and other Project activities.

This process generated a list of 60 communication skills in reading, writing, listening, and speaking, and 65 computation skills in the areas of algorithms, concepts, generalizations, and problem solving. A survey was developed to measure the extent of faculty agreement that the skills identified should be acquired by all students completing their sophomore year in Florida public post-secondary institutions. The survey was distributed to a random sample of 837 faculty members drawn from broad discipline areas. A total of 348 community college and 214 university faculty members included in the sample responded to the survey. Additional input on the skills was obtained from other faculty members sufficiently interested in the competency identification process to complete "volunteer" surveys.

The results of the surveys were used in finalizing the list of skills to be recommended to the State Board of Education. For the 60 communication skills the percentage of agreement that "every student regardless of major, should have acquired this skill by the end of the sophomore year" ranged from 70 to 99 percent. The Communications Task Force recommended that all the communication skills be retained on the final list to be submitted to the Board. For the 65 computation skills, the percentage of agreement ranged from 36 to 98 percent. Based on these results, the Computations Task Force recommended that 56 of the 65 skills be retained on the final list to be submitted to the Board.

In September, 1981, the Board of Education adopted Rule 6A-10.31, FAC, which includes a list of the 59 communications and 56 computation skills accepted by the Board. One skill in the area of listening was deleted from the list because it could not be clearly operationalized. The skills listed in the rule are expected of students by the end of the sophomore year in college. Table 1 shows the hierarchy of skills. Rule 6A-10.31, FAC, contained in Appendix B, lists the 115 skills adopted by the Board. Detailed reports of the identification and validation of skills, including the survey and tabulations of the responses, are contained in the following reports:

Essential Academic Skills for Florida Community Colleges and Universities, Part 1: Interim Report of the State Level Task Force on Communications and Computations, September, 1980.

Essential Academic Skills....Part II: Institutional Survey Questionnaire, September, 1980.

Essential Communications and Computations Skills in Public Community Colleges and Universities in Florida, December, 1980.

These reports were published by the Florida State Department of Education and are available from the CLASP Office of the DOE.

TABLE 1

Classification of Skills

COMMUNICATIONS			
I. Reading	II. Listening	III. Writing	IV. Speaking
A. Literal Comprehension	A. Literal Comprehension	A. Composition of Discourse	A. Composition of Message
B. Critical Comprehension	B. Critical Comprehension	B. Transmission of Discourse	B. Transmission of Message
	Number of Skills Within Each Area		
11	13	24	11

COMPUTATIONS			
I. Algorithms	II. Concepts	III. Generalizations	IV. Problem Solving
A. Arithmetic B. Geometry C. Algebra D. Statistics E. Logical Reas. F. Computer Tech.	A. Arithmetic B. Geometry C. Algebra D. Statistics E. Logical Reas. F. Computer Tech.	A. Arithmetic B. Geometry C. Algebra D. Statistics E. Logical Reas. F. Computer Tech.	A. Arithmetic B. Geometry C. Algebra D. Statistics E. Logical Reas. F. Computer Tech.
	Number of Skills Within Each Area		
13	25	9	9

Test Search

Once the skills had been identified, the Standing Committee on Student Achievement, with the assistance of project staff, began its task of identifying tests and other assessment procedures which could be used to measure achievement of the skills. To accomplish the task, an extensive search was conducted to identify commercially available tests and tests developed by community colleges and state universities which might be appropriate for measuring the achievement of communications and computation skills. Sixty-six tests in the area of communications and 54 tests in the area of computation were reviewed in depth. Though all of the tests addressed some of the skills, none was judged adequate for measuring all of the skills identified in Rule 6A-10.31, FAC.

A more detailed report on the test search, Test Search and Screen for College-Level Communication and Computation Skills (Department of Education, May, 1981) is available from the CLASP Office.

Development of Test Specifications

Specifications for a test which could be used to measure the achievement of the skills listed in Rule 6A-10.31, FAC, were developed between April and August of 1981 by the project director and staff. The test specifications were developed with assistance from members of the Standing Committee on Student Achievement, Communications and Computation Task Forces, and measurement consultants. Recommendations on the assessment of the skills submitted by the State Level Task Forces, as well as practical and measurement issues, were considered in determining the nature of the tasks and the number of items for each subtest. General specifications which were developed for the test are shown in Table 2.

The specifications called for the development of multiple-choice items for measuring reading, computation, and 14 of 24 writing skills. A writing sample (expository essay) was recommended for measuring levels of performance on the entire set of writing skills. Decisions were made to include all skills in each form of the test, rather than to randomly select among skills. It was also decided to include experimental items in the test forms so that data needed to select items for subsequent test forms could be generated. Later, some modifications were made in the test specifications. The number of raters for the essay was reduced from three to two, with a referee for non-contiguous splits only. Additionally, the time allowed for the computation subtest was reduced from 105 to 90 minutes following the October administration since more than 95% of the examinees completed the test within 90 minutes.

Development of Item Specifications

At the time the State Board adopted the list of college-level communication and computation skills, it directed the Articulation Coordinating Committee of the Doe (through Rule 6A-10.311, FAC) to develop item specifications which would be used in the development of a test to measure

student attainment of the skills. When it became apparent that priorities among the skills would have to be established for a test to be ready to administer in October, 1982, priority was given to the four skill areas which were included in the 1982-83 version of CLAST, viz., communication skills in reading and writing, and computation skills in algorithms and concepts. These skills are listed in Appendix C. During the Fall of 1981, item specifications for the 11 reading, 24 writing, and 36 computation skills were written by the chairpersons of the state level task forces, with assistance from content and measurement consultants, members of the Task Forces, members of the Standing Committee and the CLASP staff. Faculty members from community colleges and state universities served as the content and measurement reviewers and are identified in Appendix D.

The item specifications were used by item writers as guides for item content and format. Copies of item specifications were distributed for use in all 37 community colleges and state universities to aid faculties in planning for instruction and assessment of the skills. Copies of item specifications are available in the institutions as well from the CLASP Office.

Item Development, Review, and Analysis

Item Development. In October, 1981, Requests for Proposals for developing test items in the areas of reading, writing, and computation for the College-Level Academic Skills Test were issued by the Department of Education. The RFPs contained detailed information about the tasks to be completed, procedures for developing and reviewing items, and qualifications required of the contractor, item writers, and item reviewers. Eight proposals were received from three state universities, one community college, and one private corporation. Based on the cost proposals and quality of the proposals, the following contracts for item writing were awarded in December, 1981:

Reading Items	University of Florida
Writing Items & Essay Topics	University of Florida
Computation Items	University of South Florida

Items developed under these contracts were used in the 1982-83 forms of CLAST. Project managers, item writers, and item reviewers involved in the development and review of items for these forms are identified in Appendix D.

The following procedure was followed in developing the items:

A. Item writers and reviewers attended training sessions which included discussion of test security issues, purpose of CLAST, use of item specifications, characteristics of good test items, bias issues, and specific assignments.

B. Initial drafts of items were written and reviewed internally by other members of the item-writing teams.

C. Items were then pilot tested, and the results of the pilot test and suggestions from other item writers were used in revising the items. The pilot test involved administering items to at least thirty students and interviewing five of those to obtain in-depth response data.

D. Revised items were then reviewed by the contractor's review team, who had not been involved in the item writing phase. Attention was given to content, measurement, and bias concerns.

E. Input from these reviewers was used in revising items prior to submitting the items to the CLASP Office of the DOE.

Department of Education Review of Items. Prior to accepting the items as meeting the requirements of the contract, the DOE scheduled an independent review which involved community college and university faculty who had not been involved in the development of the items.

The purpose of the review was to insure that the items met the specifications, and were judged to be appropriate for measuring the skills, and were free of bias and other confounding factors. Reviewers were individuals with expertise in the content areas and measurement.

Sample review forms, which were used by the reviewers in evaluating the items, are contained in Appendix E. The questions contained in these forms illustrate the kinds of concerns which were addressed in the review.

Following the DOE review, the contractors made final revisions in the items and submitted camera-ready copy to the CLASP Office.

Field Test and Analysis of Objective Items. In June, 1982, a field test of 158 communications and 140 computation items was conducted in order to evaluate the test items which were being considered for inclusion in the initial forms of the test. The purposes of the field test were to gather information about the performance of college sophomores on test items, to analyze the performance of individual items, and to establish the difficulty of each item on a common scale. Twelve forms of approximately 33 items each were administered in 16 community colleges and four universities to a total of 2733 students (approximately 228 responses per item).

The data were subjected to a classical item and test analysis which yielded for each item: the percentage choosing each option, the item p-values (difficulty), and the item point-biserial correlations with total scores (discrimination indices). The analysis also produced the following statistics for each of the twelve forms: a frequency distribution of scores, the number of students taking the form, the mean and standard deviation of scores, and the KR-20 reliability coefficient.

The data were also analyzed using Rasch statistics generated by a modified BICAL program. Both item difficulty values and fit statistics were examined for the field test items. Ten linking items in communications and ten in computation constituted the common item set for the twelve forms. Item difficulty values from the different forms were adjusted to a common scale using the set of linking items.

The classical and Rasch item statistics were used in determining whether items should be included in the item pool from which the 1982-83 forms would be developed. Items were screened based on the following criteria: p-value $\geq .40$, point-biserial $\geq .30$, all options selected by some examinees, and Rasch total fit $< 1.00 + 3$ standard deviations. Items which were failed to meet the screening criteria were reviewed to determine whether they appeared to be dysfunctional or whether some other factor may have accounted for the failure to meet the criteria (e.g., the skill itself may have been judged to be very difficult or item variance may have affected the point-biserial). Empirical data of this type is used for identifying potentially dysfunctional items, not for selecting items. The primary criterion for selection of items is the judgment of reviewers that the items meet the specifications and are appropriate for measuring the skills.

Field Test and Analysis of Essay Topics. Ten of thirty essay topics developed for CLAST were field tested in three state universities and five community colleges in June, 1982. A total of 862 essays were written, scored, and analyzed.

Each essay generated from the field test was scored by two readers, using a holistic approach. A four-point scale was used in assigning ratings to the essays. The descriptions for each rating and the procedures for the scoring were developed as part of the contract with the University of Florida for developing objective writing items and essay topics.

For each topic, the following data were generated: distribution of scores, total number of essays written, number of essays written off the topic, mean and median scores, percent of complete agreement between raters, percent of agreement within one score point, Coefficient Alpha with and without the referee, and reader comments.

Topics were evaluated in terms of their clarity, relevance and appeal to the target population, suitability for expository writing, and absence of biasing effects. Student and reader comments on the topics and performance data were used in the selection of the six topics to be included in the 1982-83 forms of CLAST.

DESCRIPTION OF CLAST

1982 -1983

The 1982-83 forms of CLAST consisted of four subtests--computation, reading, writing, and essay. Following is a brief description of each subtest:

COMPUTATION - The computation subtest included multiple-choice items in the areas of arithmetic, algebra, geometry/measurement, statistics/probability, and logical reasoning.

READING - The reading subtest included multiple-choice items which measure skills in the areas of literal comprehension and critical comprehension. Literal comprehension included items that measure the ability to read for specific information contained in reading passages. Critical comprehension included items that measure the ability to make inferences or judgments about what is read.

WRITING - Writing skills in the areas of word choice, sentence structure, and grammar/spelling/punctuation were measured by multiple-choice items. Word choice items measured the ability to choose words which convey the specific meaning required by context. Sentence structure items measured the ability to identify the sentence structure that most clearly and effectively expresses the thought. Grammar, spelling, and punctuation items measured knowledge of the conventions of standard American English grammar and usage.

ESSAY - This subtest required the examinee to choose one of two topics and write an expository essay. The essay measured the ability to write a composition, provide ideas and information suitable to the purpose and audience, and use effective language which conforms to the conventions of standard American English.

The number of items by subtest and by broad skill areas within each subtest is shown in Table 2. Alternate forms of the test which met these specifications were developed for each administration.

The test consisted of two books--one containing computation items and one containing reading and writing items, and instructions for the essay. In order to increase test security, multiple forms of each test were printed for each administration. In addition, braille and cassette versions were available.

Testing Schedule. The test was administered in one morning session, which required approximately four and one-half hours. Actual testing time was three and one-half hours, plus time required for checking in examinees, coding

identifying information, distributing and collecting materials, reading directions for each subtest, and a ten-minute break. The order of administration and testing time for the computation subtest were revised following the October administration. The order in which subtests were administered in March and June and the time allowed for completion of each subtest is shown below.

Essay	50 minutes
Writing and Reading	70 minutes
Computation	90 minutes

Modifications in test format, testing schedule, and administration procedures allowed for handicapped examinees are detailed in the Test Administration Manual.

TABLE 2

TEST DESCRIPTION FOR 1982-83

BOOKLET 1

Skills	Essay Writing Sample	Topics	Scored Topics	New Topics
24	4-6 paragraph essay on a selected topic	2	2	

Skills	Writing Subtest Broad Skills Area	Total Items	Scored Items	New Items
3	Word Choice	6	5	1
5	Sentence Structure	10	8	2
6	Grammar, Spelling & Punctuation	20	16	4
	Total Items	36	29	7

Skills	Reading Subtest Broad Skill Area			
3	Literal Comprehension	12	10	2
8	Critical Comprehension	32	26	6
	Total Items	44	36	8

BOOKLET 2

Skills	Computation Subtest Broad Skill Areas			
6	Arithmetic	10	8	2
9	Algebra	16	13	3
7	Geometry & Measurement	12	10	2
7	Logical Reasoning	12	10	2
6	Statistics/Probability	10	8	2
	Total Items	60	49	11

Appendix C lists the specific skills included in each area tested.

DEVELOPMENT OF CLAST FORMS

The development of new test forms for each administration follows the procedures described below. Items are drawn from the item bank and formatted into test booklets. General and specific instructions are included to assist students. Each test form then is subjected to a series of reviews prior to and following the test administration.

Development of the Item Bank

As items are developed, they are numbered with a nine-digit code that identifies the subtest, skill, sequence number, and graphic. These items are stored in a card file that is updated as items are revised. New items are added to the bank following the review of the experimental items from each administration.

A history and attribute computer file is kept for the item bank. This file is used in the selection of items for test forms and in the test analysis process. The file includes attributes such as the item code, broad skill code, item flag, date used, and test form. Statistical data include the percent correct; item point-biserial coefficient; and Rasch difficulty, fit statistics, and index of discrimination for each item. Data on each item are kept in the active file for six administrations. After that time, a hard copy and a tape record are stored. The computer bank is then rotated to remove the data from the earliest administrations.

Test Assembly

For each administration items are drawn from the item bank to meet the test specifications. A twenty-percent overlap of items between forms is used to equate the test forms. The remaining items are selected to minimize the difference in difficulty between forms. Current item difficulty values are used in the item selection process. Test form item difficulties are centered near zero logits. Small variations in mean difficulty occur, particularly in the reading test where items are tied to specific passages. Alternate forms are adjusted to the common scale by the equating procedures.

The plan for the format and arrangement of items in the test forms is intended to make each form attractive and easy to read. Objective writing items are grouped by format and content to make the testing time efficient for the students.

Test Instructions

The general instructions give information about scoring, recording answers, number of items, and time allotted for each subtest. Directions state that scores are based on the number right with no correction for guessing. Fixed time limits are set for the essay, reading/writing subtests, and computation subtest to facilitate the administration of the test. However, these limits allow at least 90 percent of all examinees to complete each subtest.

Within the test specific instructions may precede groups of items or individual items. These instructions alert examinees to changes in item format and assist in clarifying what is required to respond to the items.

Quality Control

The consistency of quality of test forms is maintained through an extensive review process. Drafts of new test forms are reviewed by staff in the contracting agency and in the Department of Education. After changes in items and corrections are made, there is a second review of camera ready copy. Then when final review of the proof copy is completed, a group of faculty sit the examination to verify the scoring key.

Following the administration of the test a preliminary item calibration and item analysis are performed on tests that arrive early for scoring. Results of these analyses are screened for possible misprints, item flaws or key errors. Clues to these errors are low discrimination indices or Rasch fit statistics that have high values. Other indicators of problems are lack of balance in foil distributions or inordinate difficulty. Items that exhibit these characteristics are flagged, and following a CLASP staff review items may be excluded from scoring.

The pretesting of new items which are embedded in the test forms is another form of quality control. Before an item is added to the bank, it is pretested as a non-scored item, and its item statistics are reviewed. Items which do not meet the item selection criteria are examined to determine whether they are adequate measures of the skills. Any scored or non-scored item which is revised is resubmitted as an experimental item, and item statistics for the revised item are reviewed prior to its use as a scored item.

Test Analysis

A test analysis is prepared for each administration as a final step in the test development process. This analysis is used to evaluate the entire test to determine its overall quality. An item selection report is prepared and statistical analyses are conducted for the reliability of subtests, the item-total score correlations, and distributions of responses for particular examinee groups. These analyses include responses of all students for every test form.

Additional information about the performance of the test is taken from the institutional test administrators' and supervisors' reports and on-site visits to testing centers by Department of Education personnel. These reports provide information about the quality of test booklets, the standardization of the test administration and the adequacy of the allotted testing time. Based on this information, the format of the test booklets has been revised, and the testing time has been altered to improve the test administration.

VALIDITY OF THE CLAST

The College-Level Academic Skills Test has been designed to measure achievement by college sophomores of specified communication skills in the areas of reading and writing, and computation skills in the areas of algorithms and concepts. These skills are listed in Rule 6A-10.31, FAC. While it is presumed that scores on CLAST will relate positively to other measures of success in college, both prior to and subsequent to the examination, CLAST does not purport to predict grade point averages or other measures of success. Rather, validity of the test rests upon the extent to which CLAST adequately measures the specific skills which it is designed to measure; that is, the extent to which the content of the test matches the set of skills. The validity of the test is established by following the plan and procedures for developing and selecting items for each form of CLAST.

The general plan followed in developing the test is outlined below:

1. General test specifications, consistent with the purpose of CLAST, are developed by faculty who have expertise in both testing and the content areas (reading, writing, and computation), with assistance of the CLASP staff.

2. Item specifications, which detail both the content and format of the items which can be developed to measure each of the skills, are developed by faculty with expertise in both the content areas and testing, with assistance of the CLASP staff.

3. Test items are written by faculty according to the guidelines provided by the item specifications, and are reviewed by faculty and CLASP staff with careful attention given to content, measurement, and bias issues.

4. Test items are field tested in community colleges and state universities.

5. Items are analyzed statistically and selected for use in the test only if they meet criteria established by the CLASP staff and testing consultants.

6. A test plan for selection of items is followed in developing alternate forms of the test.

7. Scaled scores which are equated to the reference scale are generated using the Rasch model.

To summarize, validity of the test as a measure of achievement of the skills is established by following the plan for developing and selecting items. Content and testing specialists judge the adequacy of the items for measuring the skills, and the plan for selecting items ensures that each form of CLAST is representative of the domain of skills being tested. Scores on each of the subtests, then, can be interpreted to be valid measures of the students' achievement of the communication and computation skills which are measured by CLAST.

In order to preserve the comparability of scores from one administration to another, tests must be parallel in content, and the scales must be equated. The methods used to accomplish these requirements include both traditional test analysis procedures and Rasch model procedures. Both contribute to the quality of CLAST and are described in this section.

The CLAST scale development is based on the logistic response of Georg Rasch, presented in Probabilistic Models from Some Intelligence and Attainment Tests, 1960. Rasch describes a probabilistic model in which the probability that a person will answer an item correctly is assumed to be based on the ability of the person and the difficulty of the item. These estimates are derived independently and are not related to the particular sample of people or of items. When the assumptions of the model are met, tests of unequal difficulty can be equated.

Rasch model estimates of person ability and item difficulty are obtained using the unconditional maximum likelihood estimation procedure described in Wright, Mead, and Bell, BICAL: Calibrating Items with the Rasch Model, 1980. The probability of a score X_{vi} is expressed as

$$P(X_{vi} \mid B_v, \delta_i) = \frac{\exp [X_{vi}(B_v - \delta_i)]}{1 + \exp [B_v - \delta_i]}$$

where X_{vi} = a score, B_v = person ability, and δ_i = item difficulty. Person ability in logits represents the natural log odds for succeeding on items which define the scale origin, and the item difficulty in logits represents the natural log odds for failure on an item by persons with abilities at the scale origin.

Calibration of Items

Item difficulties are obtained by calibrating the scored items for each administration. Three systematic random samples of 700 records are drawn. The items are calibrated, and the item difficulty logits are averaged from the three calibration samples. Using the averaged difficulties, the item logits are adjusted to the October, 1982, base scale by the method explained in the test equating section.

Item history records are kept in a computer file and updated after each administration. The stability of Rasch difficulty, discrimination and fit statistics is checked, and items that change values by more than .3 logits are flagged for further examination. In addition, items are re-examined following each administration against the same item screening criteria used before the items are administered as scored items.

Newly developed or revised items are embedded within each form of the test, and then calibrated and adjusted to the base scale. These items are not counted toward examinees' scores and are not included in the initial calibrations which are used to develop the score scale. After the score scale is created, each test form is recalibrated with both the new and the scored items to estimate item difficulties. The scored items serve as a link between the new items in each test form. Item difficulties for the new items are adjusted to the base scale using the linking constant derived from the calibration of the scored items. For a complete discussion of the method see Ryan, J. Equating New Test Forms to an Existing Test, 1981.

Generation of Ability Estimates

The traditional estimate of achievement level is the raw score obtained from the number of correct answers provided. The Rasch model is used to generate ability estimates which correspond to the traditional test score.

The adjusted item logits obtained in item calibration become the basis for estimating the person abilities. Generation of the ability estimates results in a logit ability scale which corresponds to the logit difficulty scale of items. The Rasch ability logits are derived using the unconditional maximum likelihood estimation procedure of the program ABIL-EST (Ryan, 1981).

The ability estimate that corresponds to each raw score between one point and the number of items minus one is calculated. (Perfect or zero scores are not included in the Rasch calculations.) The ability logit scale is then centered at the mean for the October, 1982, administration, and transformed to the standard score scale via test equating.

Test Equating

Equating tests gives meaning to the scores over time. Using Rasch methodology, it is possible to place scores from tests of unequal difficulty on the same scale. While the CLAST difficulty is controlled by selecting items which have approximately the same average and range of difficulty for each administration, some fluctuation in difficulty may occur in order to use items that represent a broad range of content and difficulty. Test forms are linked by common sets of items to control for differences in difficulty.

The linking design for CLAST includes a twenty percent overlap of items between administrations. Tests from the first three administrations were linked with subsets of items in the base form. These linking items are a proportional representation of the content areas within each subtest. The difficulty of the links represents a range of easy to harder items. Item calibration values of the linking items are averaged and subtracted from the average difficulty of these items in the base year to obtain the linking constant.

For each administration, CLAST item difficulties are adjusted to the base scale established with the October, 1982, administration. The item logits obtained from the calibration of the scored items are adjusted by

adding the linking constant to each logit. The difference in average difficulty represents the shift in overall difficulty between test forms. This constant is added to the current item logits to adjust them to the base scale. The stability of the link is evaluated by comparing the difficulty values of the linking items over time to the values in the base scale. Stability is maintained by linking to the base scale and to one additional examination in a three-way linking design.

Reliability of Scores

Reliability is an indicator of the consistency in measurement of student achievement. It provides an estimate of the extent of the variation in results that can be attributed to random error in measurement. The index of reliability is interpreted as the ratio of true-score variance to observed-score variance. Reliability is estimated somewhat differently for objective scores and essay ratings. The procedures used with each type of score are described in the following sections.

Objective Scores. The reliability of objective subtest scores is estimated using the Kuder-Richardson Formula 20 coefficient and the standard error of measurement. The KR-20 coefficient is an internal consistency estimate of reliability that was proposed by Kuder and Richardson in 1937. It is based on the concept that achievement on items drawn from the same content domain should be related. The formula reported as the KR-20 is

$$r_{tt} = \frac{k}{k-1}\left[\frac{s_t^2 - \Sigma pq}{s_t^2}\right]$$

where r_{tt} = estimated test reliability, s_t^2 = variance of examinees' total scores, k = number of test items, and Σpq = sum of item variances.

The KR-20 coefficient is appropriate for estimating reliability of scores for objective tests which are not highly skewed or truncated. The KR-20 coefficients for the objective writing and reading tests in particular are affected by the distribution of scores. For this reason, the standard error of measurement is also reported as an indicator of reliability for each of the objective subtests.

The standard error of measurement (SEM) represents the expected standard deviation of scores for an individual taking a large number of randomly parallel tests. The mean of the set of scores would represent the individual's true score. Therefore, the standard error of measurement can be used to estimate confidence intervals around an individual's true score. Confidence intervals applied to the obtained score are not symmetrical about the obtained score, but the estimated true score is useful in obtaining the center for a confidence zone to be used with the obtained score. The smaller the SEM, the less dispersed are the parallel test scores, and the more likely the estimate is close to the individual's true score.

The formula for computing the SEM is

$$SEM = s_t \sqrt{1-r_{tt}}$$

where s_t = standard deviation of the test scores, and r_{tt} = test reliability coefficient.

KR-20 reliability coefficients and the standard errors of measurement for the objective subtests are reported in Table 3.

TABLE 3

Reliability of Objective Subtests
1982-83 Administrations

	Reading			Writing			Computation		
	Oct.	March	June	Oct.	March	June	Oct.	March	June
KR-20	.87	.85	.85	.72	.68	.69	.90	.88	.88
SEM	2.29	2.19	2.25	1.81	1.81	1.85	2.84	2.98	3.01

Essay Ratings. Reliability of essay ratings is evaluated in several ways in order to assure that the raters have adhered to the established criteria for scoring essays. Consistency in scoring is maintained by the training of raters and the monitoring of the scoring process, and the reliability of the combined ratings is estimated by Coefficient Alpha. Both procedures are described below.

Training prior to and during the scoring is used to develop and maintain the consistency in scoring of the individual rater and the group of raters. The scoring process is monitored by checking the assignment of ratings, the number of split ratings, and the distribution of ratings of each reader. To resolve scores which are split, all papers which are assigned noncontiguous scores are submitted to a referee and the split scores resolved. During and after each reading session, reader agreement data which reflect the reliability of ratings are reviewed. Table 4 summarizes the reader agreement data for the 1982-83 administrations.

Table 4

Reader Agreement: 1982-83

	October		March		June	
	N	%	N	%	N	%
Total Papers Read	12369	100	19035	100	10365	100
Non-Contiguous Scores	552	4	739	4	420	4
Total Agreement	6416	52	9707	51	5520	53
Agreement Within One Point	5401	44	8589	45	4425	43

Reliability of the combined ratings for the essays is estimated by Coefficient Alpha which gives the expected correlation between the combined ratings of the team and those of a hypothetical parallel team doing the same task. The formula for deriving this estimate is

$$r_{kk} = \frac{k}{k-1} \left[1 - \frac{\Sigma s_i^2}{s_t^2}\right]$$

where r_{kk} = coefficient of reliability, k = number of test items, Σs_i^2 = sum of the item variances, and s_t^2 = variance of the examinees' total scores.

The Alpha coefficients by topic and student category for the ratings of the 1982-83 administrations are reported in Table 5.

Table 5

Alpha Coefficients by Topic

	Topic One With Referee			Topic Two With Referee		
	Oct.	March	June	Oct.	March	June
All Students	79	76	80	80	82	79
Males	79	76	80	81	81	78
Females	79	75	78	79	82	79
Whites	75	72	76	76	77	74
Blacks	81	76	80	80	83	75
Hispanics	82	77	80	82	86	80
Indian/Alaskan	85	84	96	81	83	79
Asian	84	83	87	90	81	85
CC-AA[1]	80	77	80	80	82	79
CC-AS[2]	81	78	84	81	84	78
Univ. Native		79	77		84	76
Univ. Transfer		72	80		78	80

[1] Community college Associate of Arts students

[2] Community college Associate of Science students

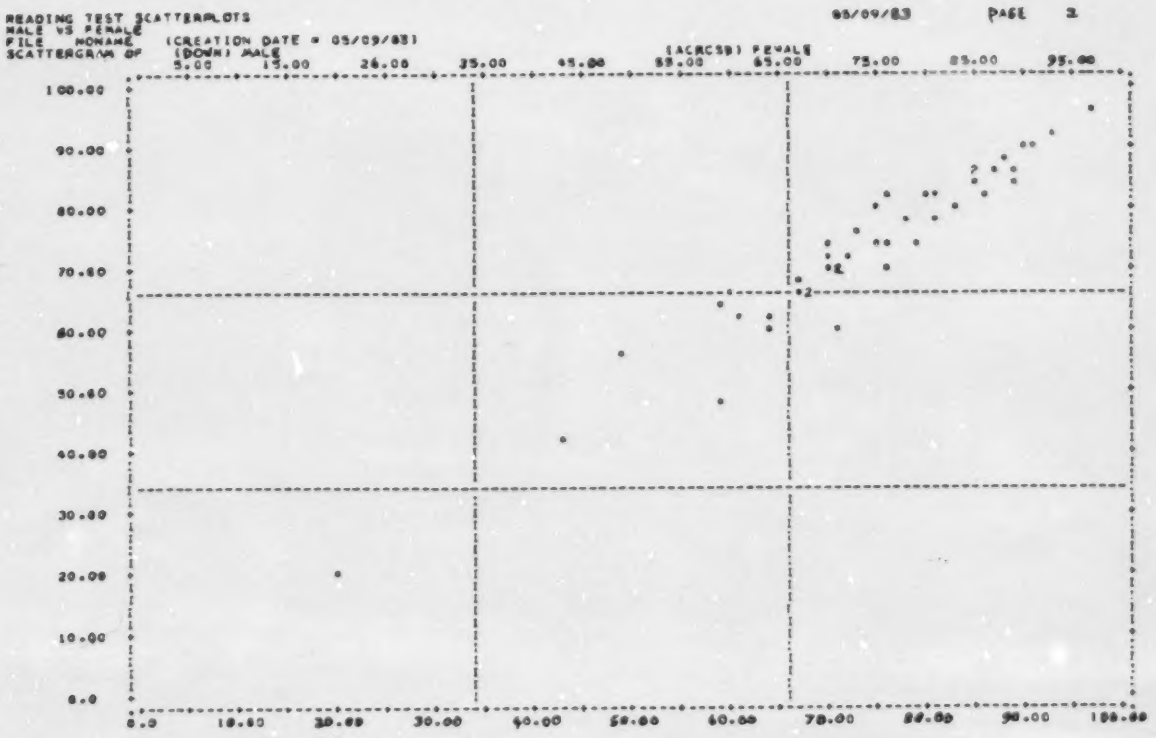
Preventing Item Bias

Establishing the validity of an examination for all groups is a continuous process that requires the documentation of the relevance of the skills, the correspondence between items and skills, and adequacy of the test construction and review procedures. Review panels were established at each stage of test development to consider the issue of bias in test items. Empirical data were also examined following each administration to screen for indications that particular items operated differently for various groups. Scatter plots of item difficulties, item statistics, and frequency distributions of test scores were analyzed. Items identified through these analyses were reexamined to determine whether factors unrelated to the skills may have caused the differences in performance.

The scatter plots which are generated contrast performance by racial/ethnic and sex categories on individual items. Item difficulties, defined as the percent correct, are identified as outliers if the item difficulty deviates substantially from the general relationship for the compared groups. Consistent differences in item difficulties may indicate only a difference in the level of achievement for the compared groups, but items that deviate from this general pattern are further examined. Figure 1 is a sample of the scatter diagrams that are produced to contrast group performance.

FIGURE 1

Item Difficulty Scatter Diagram



Item Analysis

Item analyses are reported for the total group of examinees and for each sex and racial/ethnic category. These analyses include foil distributions, item point-biserial correlations, and percent correct. A sample item analysis is shown in Figure 2.

FIGURE 2

Item Analysis

COMPUTATION SCORE PAGE 3

ITEM RESPONSES - ITEM RESPONSE FIGURES ARE TOTALS, NOT PERCENTAGES.

ITEM NUMBER	A	B	C	D	E	OMIT	MULT	ITEM DIFFICULTY	ITEM DISCRIMINATION	POINT BISERIAL CORRELATION
1	936	1088	7270+	989	0	87	1	0.70	0.52	0.45
2	2679	458	5012+	2185	0	36	1	0.48	0.46	0.36
3	1175	1743	1211	6189+	0	51	2	0.60	0.66	0.52
4	7528+	1004	629	1165	0	45	0	0.73	0.43	0.39
5	2945+	1389	3305	2661	0	71	0	0.28	0.33	0.29
6	1835	5650+	957	1859	0	70	0	0.54	0.39	0.32
7	1614	733	7020+	963	0	41	0	0.68	0.39	0.34
8	724	1472	1423	6694+	0	57	1	0.65	0.58	0.48
9	70	80	124	10071+	0	24	2	0.97	0.07	0.21
10	78	4132	171	5961+	0	29	0	0.57	0.59	0.48
11	300	465	1785	7775+	0	40	6	0.75	0.36	0.34
12	1513	1823	4068+	2926	0	39	2	0.39	0.43	0.36
13	538	8493+	190	1127	0	23	0	0.82	0.42	0.46
14	737	487	6102+	3003	0	41	1	0.59	0.39	0.31
15	4602+	1530	2269	1896	0	74	0	0.44	0.44	0.35
16	628	445	8133+	1139	0	26	0	0.78	0.48	0.47
17	1607	5457+	1259	2011	0	37	0	0.53	0.49	0.39
18	1905	4376+	1188	2825	0	76	1	0.42	0.36	0.29
19	3908	6169+	174	73	0	47	0	0.39	0.51	0.41
20	497	2837	6299	674	0	64	0	0.61	0.58	0.47
21	9838+	137	144	219	0	33	0	0.95	0.13	0.26
22	253	2659	7380+	45	0	34	0	0.71	0.49	0.42
23	2282	256	383	7440+	0	9	1	0.72	0.35	0.32
24	977	4073+	3507	1779	0	34	1	0.39	0.39	0.32
25	584	740	233	8794+	0	20	0	0.85	0.28	0.33
26	6820+	2975	380	182	0	14	0	0.66	0.42	0.36
27	1787	2828	3687+	2024	0	44	1	0.36	0.60	0.49
28	198	251	517	9374+	0	30	1	0.90	0.24	0.35
29	1568	791	1397	6592+	0	23	0	0.64	0.58	0.48
30	816	3564	459	5514+	0	17	1	0.53	0.34	0.28
31	370	1509	7646+	784	0	62	0	0.74	0.37	0.35
32	7175+	796	2337	33	0	29	1	0.69	0.36	0.32
33	5775	671	3582+	325	0	18	0	0.35	0.61	0.50
34	518	627	1169	8031+	0	25	1	0.77	0.36	0.33
35	5130+	1463	2825	909	0	43	1	0.49	0.48	0.38
36	3530	350	5665+	808	0	16	2	0.55	0.39	0.32
37	880	2143	6791+	516	0	41	0	0.65	0.55	0.46
38	1224	448	1736	6944+	0	17	2	0.67	0.55	0.47
39	5442+	2579	1025	1265	0	58	2	0.52	0.45	0.37
40	573	2231	1834	5675+	0	58	0	0.55	0.51	0.41
41	7121+	1489	1132	535	0	93	1	0.69	0.60	0.52
42	3056	2606+	3938	697	0	74	0	0.25	0.39	0.36
43	917	1164	6223+	1980	0	86	1	0.60	0.61	0.49
44	879	2157	1366	5861+	0	107	1	0.57	0.65	0.53
45	569	1890	1322	6541+	0	49	0	0.63	0.62	0.51
46	1207	5065+	1266	2797	0	35	1	0.49	0.63	0.50
47	253	363	5018+	4708	0	29	0	0.48	0.33	0.27
48	1435	1810	2554	4531+	0	41	0	0.44	0.58	0.45
49	2102	4835+	1823	1426	0	182	3	0.47	0.28	0.23

\+ - INDICATES CORRECT ANSWER
** - INDICATES EVERYONE GIVEN CREDIT
* - INDICATES QUESTION THROWN OUT

SCORING AND REPORTING PROCEDURES

The procedures for scoring the CLAST are designed to provide quality control and score scale stability for a testing program that has complex scoring and reporting requirements. Multiple administrations within a year and across years necessitate the development of alternate forms that must be equated. The process for scoring and reporting reflects the concern for the reliability and comparability of the scores and for the appropriate use of the scores.

Scoring Activities

Editing Answer Sheets. Following each administration, as answer sheets are received from each institution, they are edited for errors. Answer sheets are read by an NCS Sentry 7018 scanner which has computer program checks built into the scoring process that identify mismarked or miscoded sheets. Each answer sheet identified by this process is hand checked and corrected according to the established conventions.

Rating sheets for the holistic scoring of the essays are also machine scored. Editing procedures for the holistic scoring include a verification of the legitimacy of the reader numbers and score codes. Papers with invalid codes or with ratings that differ by more than one point are returned to the referee to be corrected and/or reviewed.

Scoring Conventions. Within the parameters of number-right scoring, certain conventions are observed: For a score to be considered valid, at least one response must be made on the answer sheet. Omits and double marks are counted as incorrect. To be scored, responses must be recorded in the appropriate section of the answer booklet. To receive credit for the essay subtest, students must write on one of the two topics provided.

Students' subtest scores below the chance level are compared to their other subtest scores. If a score is inconsistent with the student's performance on the other subtests, it is hand checked to determine whether the form code has been correctly coded.

Generation of Score Scales

A three-digit standard scaled score is generated for each administration for each of the objective subtests. The standard score scale is a linear transformation of the Rasch ability logits adjusted for the mean of the October administration. The formula used is

$$S_i = 30(X_b - C) + 300$$

where S_i = scaled score, X_b = ability logit, and C = October 1982 scale adjustment factor.

The score scale ranges from approximately 100 points to 400 points. The scale is centered at 300 points, which designates the state average score on the October, 1982, administration. All subsequent examinations are equated to this administration. Differences in scaled score ranges across test forms occur as a result of differences in overall difficulty of test forms. The overall difficulty of each form is controlled, however, so that these shifts in score range are small. If one test form is more difficult than another, it is possible to obtain a higher scaled score on the harder form because the harder form measures a higher level of achievement.

The essay score is assigned on a scale of two to eight points. Two readers rate each essay on a rating scale from one to four points. The essay score is the sum of the two ratings. The holistic scoring procedure and rating scale are discussed in the next section.

Raw score to scaled score transformation tables are generated for each administration. The 1982-83 transformations are shown in Tables 6 and 7. The score conversion table for the March and June, 1983, administrations has a wider scaled score range than does the table for the October, 1982, administration. A procedural change was made for item calibration following the October administration when it became clear that the scores were not normally distributed. The BICAL normal approximation method of calibration was used for the October administration. This method is appropriate for long tests and a symmetrical distribution of scores. The corrected unconditional maximum likelihood estimation procedure of BICAL was used beginning in March, 1983. The change in procedure primarily affected scores at the extremes of the distributions as shown in Tables 6 and 7.

TABLE 6

SCORE CONVERSION TABLE: OCTOBER, 1982

COMPUTATION			READING			WRITING		
RAW SCORE	RASCH ABILITY	SCALED SCORE	RAW SCORE	RASCH ABILITY	SCALED SCORE	RAW SCORE	RASCH ABILITY	SCALED SCORE
0	-3.17	174	0	-3.30	165	0	-3.61	135
1	-2.88	183	1	-2.91	176	1	-3.09	151
2	-2.68	189	2	-2.64	184	2	-2.74	161
3	-2.50	195	3	-2.39	192	3	-2.40	172
4	-2.32	200	4	-2.17	198	4	-2.14	179
5	-2.16	205	5	-1.94	205	5	-1.87	187
6	-1.97	210	6	-1.73	212	6	-1.65	194
7	-1.83	215	7	-1.56	217	7	-1.43	201
8	-1.70	219	8	-1.40	222	8	-1.24	206
9	-1.55	223	9	-1.23	227	9	-1.05	212
10	-1.43	227	10	-1.09	231	10	-0.86	218
11	-1.32	230	11	-0.95	235	11	-0.68	223
12	-1.19	234	12	-0.81	239	12	-0.50	229
13	-1.09	237	13	-0.67	243	13	-0.32	234
14	-0.99	240	14	-0.54	247	14	-0.14	239
15	-0.89	243	15	-0.41	251	15	0.04	245
16	-0.79	246	16	-0.28	255	16	0.22	250
17	-0.69	249	17	-0.15	259	17	0.40	256
18	-0.60	252	18	-0.02	263	18	0.59	261
19	-0.50	255	19	0.11	267	19	0.78	267
20	-0.41	257	20	0.24	271	20	0.97	273
21	-0.32	260	21	0.37	275	21	1.16	278
22	-0.23	263	22	0.51	279	22	1.39	285
23	-0.13	266	23	0.64	283	23	1.61	292
24	-0.04	268	24	0.78	287	24	1.87	300
25	0.05	271	25	0.91	291	25	2.12	307
26	0.14	274	26	1.05	295	26	2.44	317
27	0.24	277	27	1.22	300	27	2.76	326
28	0.33	279	28	1.37	305	28	3.11	337
29	0.42	282	29	1.54	310	29	3.62	352
30	0.51	285	30	1.74	316			
31	0.61	288	31	1.93	321			
32	0.70	291	32	2.16	328			
33	0.80	294	33	2.39	335			
34	0.90	297	34	2.64	343			
35	1.00	300	35	2.92	351			
36	1.10	303	36	3.32	363			
37	1.20	306						
38	1.33	309						
39	1.44	313						
40	1.56	316						
41	1.68	320						
42	1.83	324						
43	1.97	329						
44	2.15	334						
45	2.32	339						
46	2.49	344						
47	2.68	350						
48	2.88	356						
49	3.17	365						

TABLE 7

SCORE CONVERSION TABLE: MARCH AND JUNE 1983

COMPUTATION			READING			WRITING		
RAW SCORE	RASCH ABILITY	SCALED SCORE	RAW SCORE	RASCH ABILITY	SCALED SCORE	RAW SCORE	RASCH ABILITY	SCALED SCORE
0	-6.15	115	0	-6.10	117	0	-6.83	095
1	-5.12	146	1	-5.14	145	1	-5.84	124
2	-4.33	170	2	-4.40	168	2	-5.09	147
3	-3.84	184	3	-3.95	181	3	-4.61	161
4	-3.48	195	4	-3.62	191	4	-4.25	172
5	-3.18	204	5	-3.34	199	5	-3.95	181
6	-2.94	211	6	-3.11	206	6	-3.68	189
7	-2.73	211	7	-2.90	213	7	-3.44	196
8	-2.54	223	8	-2.71	218	8	-3.22	203
9	-2.37	228	9	-2.54	223	9	-3.01	209
10	-2.21	233	10	-2.38	228	10	-2.81	215
11	-2.07	237	11	-2.23	233	11	-2.62	221
12	-1.93	242	12	-2.08	237	12	-2.43	227
13	-1.80	246	13	-1.94	241	13	-2.24	232
14	-1.68	249	14	-1.80	246	14	-2.06	238
15	-1.56	253	15	-1.67	249	15	-1.89	243
16	-1.45	256	16	-1.54	253	16	-1.69	249
17	-1.34	259	17	-1.41	257	17	-1.50	255
18	-1.24	262	18	-1.27	261	18	-1.31	260
19	-1.14	265	19	-1.14	265	19	-1.11	266
20	-1.04	268	20	-1.01	269	20	-0.91	272
21	-0.94	271	21	-0.87	273	21	-0.69	279
22	-0.84	274	22	-0.73	278	22	-0.46	286
23	-0.75	277	23	-0.58	282	23	-0.22	293
24	-0.65	280	24	-0.43	287	24	0.06	301
25	-0.56	283	25	-0.27	291	25	0.37	311
26	-0.46	286	26	-0.10	297	26	0.74	322
27	-0.37	288	27	0.09	302	27	1.22	336
28	-0.27	291	28	0.29	308	28	1.98	359
29	-0.18	294	29	0.52	315	29	2.98	389
30	-0.08	297	30	0.79	323			
31	0.02	300	31	1.12	333			
32	0.12	303	32	1.57	347			
33	0.22	306	33	2.30	369			
34	0.33	309	34	3.25	397			
35	0.44	313						
36	0.55	316						
37	0.67	320						
38	0.80	324						
39	0.93	327						
40	1.07	332						
41	1.22	336						
42	1.39	341						
43	1.58	347						
44	1.79	353						
45	2.05	361						
46	2.36	370						
47	2.80	384						
48	3.51	405						
49	4.44	433						

Scoring of Essays

Holistic Scoring. Holistic scoring or evaluation is a process for judging the quality of writing samples which has been used for many years by testing agencies in credit-by-examination, state assessment, and teacher certification programs.

Essays are scored holistically--that is, for the total overall impression they make on the reader--rather than analytically, which requires careful analysis of specific features of a piece of writing. Holistic scoring assumes that the skills which make up the ability to write are closely interrelated and that one skill cannot be easily separated from the others. Thus the writing is viewed as a total work in which the whole is something more than the sum of the parts. A reader reads a writing sample once, obtaining an impression of its overall quality, and then assigns a numerical rating to the paper based on his/her judgment of how well it meets a particular set of established criteria. CLAST essays are judged using the four-point scale described below.

Essay Rating Scale

The ratings reflect the four levels of performance that are described below:

Rating 1: Writer includes very little, if any specfic relevant supporting detail but, instead, uses generalizations for support. Thesis statement and organization are vague and/or weak. Underdeveloped, ineffective paragraphs do not support the thesis. Sentences lack variety, usually consisting of a series of subject-verb and, occasionally, complement constructions. Transitions and coherence devices are not discernible. Syntactical, mechanical, and usage errors occur frequently.

Rating 2: Writer employs a limited amount of specific detail relating to the subject. Thesis statement and organization are unambiguous. Paragraphs generally follow the organizational plan, and they are usually sufficiently unified and developed. Sentence variety is minimal and constructions lack sophistication. Some transitions are used and parts are related to each other in a fairly orderly manner. Some errors occur in syntax, mechanics, and usage.

Rating 3: Writer presents a considerable quantity of relevant and specific detail in support of the subject. The thesis statement expresses the writer's purpose. Reasonably well-developed, unified paragraphs document the thesis. A variety of sentence patterns occurs, and sentence construction indicates that the writer has facility in the use of language. Effective transitions are accompanied by sentences constructed with orderly relationships between word groups. Syntactical, mechanical, and usage errors are minor.

Rating 4: Writer uses an abundance of specific, relevant details, including concrete examples, that clearly support generalizations. Thesis statement effectively reflects the writer's purpose. Body paragraphs carefully follow the organizational plan stated in the introduction and are fully developed and tightly controlled. A wide variety of sentence constructions is used. Appropriate transitional words and phrases and effective coherence techniques make the prose distinctive. Virtually no errors in syntax, mechanics, and usage occur.

A more complete description of the scoring process can be found in Procedures for Conducting Holistic Scoring for the Essay Portion of the College-Level Academic Skills Test, which is available from the CLASP Office.

The holistic scoring session must be conducted in a highly organized manner with competent staff members who have clearly specified responsibilities. For 10,000 essays, the holistic scoring reading staff consists of a chief reader, 3 assistant chief readers, 20 table leaders, and 100 readers. A support staff of a manager, 5 clerks, and an optical scanner operator are also required.

The scoring procedure follows this pattern: Prior to the scoring session, the chief reader and his assistants sample the total group of essays to choose examples from each of the two topics which clearly represent the established standards for each of the four ratings on the rating scale. These essays are known as range finders. In addition, other essays are chosen to be used as training materials during the scoring sessions.

After the range finders and samples are selected, the table leaders meet with the chief and assistant chief readers to score the samples and determine whether the samples clearly represent the four levels on the scale. The purpose of this session is to refine the sample selection and to assure consensus among table leaders. Range finders from previous administrations are also reviewed and used in the training to insure consistency in scoring from one administration to the next.

Immediately prior to and intermittently throughout the scoring session, the chief reader trains the readers using the range finders and other samples. Immediately after the initial training session, the scoring begins. Each essay is read by two readers who assign a rating of "1" to "4." The readers are not aware of the identity of the writer of the essay nor of the score assigned by the other reader. The scoring process is so managed that no reader reads the same essay twice. These two ratings are summed and the essay is assigned a total score between 2 and 8. In cases in which the two ratings are non-contiguous, the essay is read by a third reader called a referee. The rating given by the referee replaces the most divergent of the other two ratings.

Recruitment of Readers. Each institution that participates in the College-Level Academic Skills testing program has an opportunity to participate in the holistic scoring process. The chief reader solicits nominations for readers from the chairs of English Departments in community colleges and universities which have lower-division programs. Nominations for readers are made on the basis of the candidate's interest in the process, willingness to set aside personal standards for judging the quality of writing and undergo training, and availability to work over weekends. A candidate must have a minimum of two years experience teaching English Composition, hold at least a Master's Degree or equivalent with a major in English in one or more degrees, and teach English Composition as part of his or her assigned responsibilities. Nominations may include secondary school teachers who teach composition at the junior or senior year level in high schools and faculty who teach composition in private postsecondary institutions.

Upon receiving nominations from department chairs, the chief reader and the CLAST statewide test administrator ask each nominee interested in becoming a reader to complete and submit an application form. The forms are used in determining whether applicants meet the criteria for readers.

Reporting Test Results

The reports listed below are generated for each administration. In addition to these reports, institutions can generate their own reports and update files of student records using data tapes made available by the STA which contain student responses to all items. A test blueprint, which gives item-skill correspondence, and the data tape format are provided to the institutions.

State Reports.

1. State frequency distributions of scores by

    a. Student classification

        Community college A.A. program
        Community college A.S. program
        University native student
        University transfer student

    b. Racial/ethnic classification

        White non-Hispanic, Hispanic, black non-Hispanic, American Indian/Alaskan native, Asian/Pacific islander, and other, including foreign national

    c. Females by racial/ethnic classification

    d. Males by racial/ethnic classification

2. State summary reports by

    a. Student classification
    b. Racial/ethnic classification
    c. Sex by racial/ethnic classification
    d. Region

3. State roster of examinees' scores

4. Statistical reports

    a. Rasch item calibrations and fit statistics
    b. Scaled score derivations
    c. Classical item analysis by racial/ethnic classification
    d. Item difficulty plots by sex and racial/ethnic classification
    e. Interrater reliability for essay scores
    f. Coefficient Alpha by sex and racial/ethnic classification for essay scores
    g. KR-20 coefficients and SEMs for objective subtests

Institutional Reports.

1. Institutional frequency distributions by

    a. Student classification
    b. Racial/ethnic classification
    c. Females by racial/ethnic classification
    d. Males by racial/ethnic classification

2. Institutional summary statistics (means and standard deviations) by

    a. Student classification
    b. Racial/ethnic classification
    c. Sex by racial/ethnic classification

3. Institutional roster of examinees' scores

Student Reports. The individual student report, which includes a score interpretation guide, is mailed four to six weeks after the examination date. A copy of the individual score report is shown in Figure 3. Scale scores are reported for each subtest. Percent correct in each broad skill area is reported in the boxes to the right of the scale score for each objective subtest. For interpretation purposes, the percent of items correct is reported to the student, but these scores do not become part of the student's transcript. The percent correct scores are intended to help students assess their relative strengths and weaknesses in the skills assessed by the test.

Figure 3

Individual Score Report
College-Level Academic Skills Test
Date of Exam:

_____
SS#

_____
INSTITUTION

Following are your results for the College-Level Academic Skills Test. The enclosed interpretation guide will help you understand your scores. The three digit numbers listed first in the three boxes below are your scale scores for each subtest. After each scale score you will find the percent of items you answered correctly for each of the broad skill areas within the subtest. The score in the last box is your essay grade.

COMPUTATION

SCALE SCORE Computation	Arithmetic	Algebra	Geometry – Measurement	Logical Reasoning	Statistics

READING

SCALE SCORE Reading	Literal Comprehension	Critical Comprehension

WRITING

SCALE SCORE Writing	Word Choice	Sentence Structure	Grammar, Spelling, Punctuation

ESSAY

Essay Rating

If you have questions about your scores, you should contact:

Interpretation and Use of Scores

CLAST scores are reported to indicate students' achievement of those skills upon which the test is based. The CLAST scaled scores for each subtest, not the raw scores, are used for this purpose since the scaled scores have been adjusted for differences in difficulty in test forms. A scaled score of 300, for instance, represents the same level of achievement across forms but may require a higher raw score on an easier test form than on a harder one. The same scaled score, then, represents the same level of achievement of the skills regardless of the test form which was taken.

Raw score to scaled score transformations for the 1982-83 administrations are shown in Tables 6 and 7.

Use of scores earned on CLAST during 1982-83 was limited to student advising and curriculum improvement. Under current provisions of Florida Statutes, effective August 1, 1984, scores on CLAST will be used to determine whether students have met State Board of Education minimum standards for the award of an Associate of Arts degree or admission to upper division status.

CLAST was not developed to predict success in upper division programs, but to assess the level of achievement of the skills listed in Appendix C. Any use of the scores for selection of students for specific upper division programs must be empirically validated.

SUMMARY OF 1982-83 RESULTS

Results of the 1982-83 administrations are reported in Table 8.

Table 8

Summary of Results
1982-83 Administrations

	READING			WRITING			COMPUTATION			ESSAY		
	Oct.	March	June	Oct.	March	June	Oct.	March	June	Oct.	March	June
Examinees	12,377	19,050	10,375	12,363	19,052	10,376	12,391	19,041	10,371	12,369	19,035	10,365
No. Items	36	34	34	29	29	29	49	49	49			
Raw Score Mean	26.0	26.0	25.0	23.6	23.9	23.5	33.9	30.0	29.4			
Raw Score Std. Dev.	6.3	5.6	5.9	3.4	3.1	3.3	8.8	8.7	8.8			
Raw Score Median	28	28	27	24	24	24	35	31	30			
Scaled Score Mean	300	304	300	300	307	303	300	301	298	4.7	4.9	4.7
Scaled Score Std. Dev.	27.6	33.4	33.9	23.8	30.9	30.7	27.0	30.4	30.3	1.5	1.4	1.4
Scaled Score Median	305	308	302	300	301	301	300	300	297	5.0	5.0	5.0
% Reaching End of Subtest	96	98	97	99	99	99	99	99	99			

REFERENCES

Florida Department of Education. CLAST Test Administration Manual. 1982-83.

Florida Department of Education. CLAST Test Administration Plan. 1982-83.

Florida Department of Education, Essential Academic Skills for Florida Community Colleges and Universities, Part I: Interim Report of the State Level Task Force on Communications and Computations. 1980.

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Florida Department of Education. Procedures for Conducting Holistic Scoring for the Essay Portion of the College-Level Academic Skills Test. 1980.

Florida Department of Education. Test Search and Screen for College-Level Communication and Computation Skills. 1981.

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GLOSSARY

College-Level Academic Skills

The communications and computation skills adopted by the State Board of Education in Rule 6A-10.31, FAC.

CLAST

The College-Level Academic Skills Test, a test developed by the Department of Education pursuant to Section 229.551(3)(k), Florida Statutes to measure student achievement of the skills listed in Rule 6A-10.31, FAC.

CLASP

The College-Level Academic Skills Project, a cooperative faculty activity maintained to advise the Department of Education and ensure continuing faculty contributions to decisions concerning skills to be expected of college students, the ways in which the skills are tested, and the utilization of test results.

Chairperson of CLASP

A faculty member who is designated by the Department and who serves on a part-time basis to direct and coordinate activities of the College-Level Academic Skills Project.

The CLASP Office of the DOE

A unit in the Office of the Deputy Commissioner for Special Programs through which the Commissioner of Education exercises responsibility for CLAST.

The Statewide Test Administrator (STA)

The contractor assigned responsibility for functions involved in the development and administration of CLAST.

Institutional Test Administrator (ITA)

The officer in each community college, state university, or other participating institution who is assigned responsibility for coordinating all activities related to the administration of CLAST in that institution.

LAWS RELATING TO CLAST

Florida Statutes

Section 229.053 General Powers of State Board

(2) The board has the following duties:

(d) To adopt for public universities and community colleges, and from time to time modify, minimum and uniform standards of college-level communication and computation skills generally associated with successful performance and progression through the baccalaureate level; and to approve tests and other assessment procedures which measure student achievement of those skills ....

Section 229.551 Educational Management

(3) As a part of the system for educational accountability the department shall:

(i) Maintain for the information of the State Board of Education and the Legislature a file of data compiled by the Articulation Coordinating Committee to reflect achievement of college-level communication and computation competencies by students in state universities and community colleges.

(j) Develop or contract for, and submit to the State Board of Education for approval, tests which measure and diagnose student achievement of college-level communication and computation skills. Any tests and related documents developed shall be exempt from the provisions of s. 119.07. The commissioner shall maintain statewide responsibility for the administration of such tests and may assign administrative responsibilities for the tests to any public university or community college. The state board, upon recommendation of the commissioner, is authorized to enter into contracts for such services beginning in one fiscal year and continuing into the next year which are paid from the appropriation for either or both fiscal years.

Section 240.239 Associate of Arts degrees; issuance

(3) An Associate of Arts degree shall not be granted unless a student has successfully completed minimum requirements for college-level communication and computation skills adopted by the State Board of Education and a minimum of 60 academic semester hours or the equivalent, with not less than 36 of the semester hours in general education courses such as communications, mathematics, social sciences, humanities, and natural sciences.

Section 240.233 Universities; admission of students

(5) Effective August 1, 1984, rules of the State Board of Education shall require the use of scores on tests of college-level communication and computation skills provided in s. 229.551 as a condition for admission of students to upper division instructional programs from community colleges, including those who have been awarded Associate of Arts degrees. Use of such test scores as an admission requirement shall extend equally and uniformly to students enrolled in lower divisions of the State University System and to transfer students from other colleges and universities. Effective August 1, 1982, the tests shall be required for community college students seeking admission to upper division instructional programs in the State University System. The use of test scores prior to August 1, 1984, shall be limited to student counseling and curriculum improvement.

Section 240.319 Community college district boards of trustees; duties and powers

(3) Such rules and procedures for the boards of trustees include, but are not limited to the following:

(r) Effective August 1, 1984, each board of trustees shall require the use of scores on tests for college-level communication and computation skills provided in s. 229.551 as a condition for graduation with an Associate of Arts degree. Use of test scores prior to August 1, 1984, shall be limited to student counseling and curriculum improvement.

Section 119.07 Inspection and examination of records; exemptions

(1)(a) Every person who has custody of public records shall permit the records to be inspected and examined by any person desiring to do so, at reasonable times, under reasonable conditions, and under supervision by the custodian of the records or his designee. The custodian shall furnish copies or certified copies of the records upon payment of fees as prescribed by law or, if fees are not prescribed by law, upon payment of the actual cost of duplication of the copies. Unless otherwise provided by law, the fees to be charged for duplication of public records shall be collected, deposited, and accounted for in the manner prescribed for other operating funds of the agency.

(3)(a) All public records which are presently provided by law to be confidential or which are prohibited from being inspected by the public, whether by general or special law, shall be exempt from the provisions of subsection (1).

Section 120.52 Definitions.-As used in this (Administrative Procedure) act

(14) "Rule" means each agency statement of general applicability that implements, interprets, or prescribes law or policy or describes the organization, procedure, or practice requirements of an agency and includes any form which imposes any requirement or solicits any information not specifically required by statute or by existing rule. The term also includes the amendment or repeal of a rule. The term does not include:

(e) Any tests, test scoring criteria, or testing procedures relating to student assessment which are developed or administered by the Department of Education pursuant to s. 299.57, s. 232.245, s. 232.246, or s. 232.247 or any other statewide education test required by law.

Florida Administrative Code

6A-10.31 College-level communication and computation skills. The communication and computation skills identified herein, pursuant to Section 229.053(2)(d), Florida Statutes, are associated with successful performance of students in college programs through the baccalaureate level.

(1) The following skills, by designated category, are defined as college-level communication skills:

(a) Reading with literal comprehension includes all of the following skills:

1. Recognizing main ideas in a given passage.
2. Identifying supporting details.
3. Determining meaning of words on the basis of context.

(b) Reading with critical comprehension includes all of the following skills:

1. Recognizing the author's purpose.
2. Distinguishing between statement of fact and statement of opinion.
3. Detecting bias.
4. Recognizing author's tone.
5. Recognizing explicit and implicit relationships within sentences.
6. Recognizing explicit and implicit relationships between sentences.
7. Recognizing valid arguments.
8. Drawing logical inferences and conclusions.

(c) Listening with literal comprehension includes all of the following skills:

1. Recognizing main ideas.
2. Identifying supporting details.
3. Recognizing explicit relationships among ideas.
4. Recalling basic ideas and details.

(d) Listening with critical comprehension includes all of the following skills:

1. Perceiving the speaker's purpose.
2. Perceiving the speaker's organization of ideas and information.
3. Discriminating between statements of fact and statements of opinion.
4. Distinguishing between emotional and logical arguments.
5. Detecting bias.
6. Recognizing the speaker's attitude.
7. Synthesizing by drawing logical inferences and conclusions.
8. Evaluating objectively.
9. Recalling the arguments and identifying the implications.

(e) Composing units of discourse providing ideas and information suitable for purpose and audience includes all of the following skills:

1. Selecting a subject which lends itself to expository writing.
2. Determining the purpose for writing.
3. Limiting the subject to a topic which can be developed within the requirements of time, purpose, and audience.
4. Formulating a thesis statement which reflects the purpose.
5. Developing the thesis statement by all of the following:

a. Providing adequate support which reflects the ability to distinguish between generalized and concrete evidence.
b. Arranging the main ideas and supporting details in an organizational pattern appropriate to the expository purpose.
c. Writing unified prose in which all supporting material is relevant to the thesis statement.
d. Writing coherent prose, providing effective transitional devices which clearly reflect the organizational pattern and the relationships of the parts.

(f) Transmitting ideas and information in effective written language which conforms to the conventions of standard American English includes all of the following skills:

1. Demonstrating effective word choice by all of the following:

a. Using words which convey the denotative and connotative meanings required by context.
b. Avoiding slang, jargon, cliches, and pretentious expressions.
c. Avoiding wordiness.

2. Employing conventional sentence structure by all of the following:

a. Placing modifiers correctly.
b. Coordinating and subordinating sentence elements according to their relative importance.
c. Using parallel expressions for parallel ideas.
d. Avoiding fragments, comma splices, and fused sentences.

3. Employing effective sentence structure by all of the following:

a. Using a variety of sentence patterns.
b. Avoiding unnecessary use of passive construction.
c. Avoiding awkward constructions.

4. Observing the conventions of standard American English grammar and usage by all of the following:

a. Using standard verb forms.
b. Maintaining agreement between subject and verb, pronoun and antecedent.

c. Using proper case forms.
d. Maintaining a consistent point of view.
5. Using standard practice for spelling, punctuation, and capitalization.
6. Revising, editing, and proofreading units of written discourse to assure clarity, consistency, and conformity to the conventions of standard American English.

(g) Speaking involves composing the message, providing ideas and information suitable to topic, purpose and audience which includes all of the following skills:

1. Determining the purpose of the oral discourse.
2. Choosing a topic and restricting it according to purpose and audience.
3. Fulfilling the purpose by the following:
a. Formulating a thesis statement.
b. Providing adequate support material.
c. Selecting a suitable organizational pattern.
d. Demonstrating careful choice of words.
e. Providing effective transitions.

(h) Speaking involves transmitting the message, using oral delivery skills suitable to the audience and the occasion by all of the following skills:

1. Employing vocal variety in rate, pitch, and intensity.
2. Articulating clearly.
3. Employing the level of American English appropriate to the designated audience.
4. Demonstrating nonverbal behavior which supports the verbal message with eye contact and appropriate posture, gestures, facial expressions, and body movements.

(2) The following skills, by designated category, are defined as college-level computation skills:

(a) Demonstrating mastery of all of the following arithmetic algorithms:

1. Adding, subtracting, multiplying, and dividing positive rational numbers.
2. Adding, subtracting, multiplying and dividing positive rational numbers in decimal form.

(b) Demonstrating mastery of all of the following geometric and measurement algorithms:

1. Rounding measurements to the nearest given unit of the measuring devices used.
2. Calculating distances, areas, and volumes, including English-metric conversions when given the conversion units.

(c) Demonstrating mastery of all of the following algebraic algorithms:

1. Adding, subtracting, multiplying, and dividing real numbers.
2. Applying the order-of-operations agreement to computations involving numbers and variables.
3. Using scientific notation in calculations involving very large or very small measurements.
4. Solving linear equations and inequalities.
5. Using given formulas to compute results, when geometric measurements are not involved.

(d) Demonstrating mastery of all of the following statistical algorithms, including some from probability:

1. Identifying information contained in bar, line, and circle graphs.
2. Determining the mean, median, and mode of a set of numbers.
3. Selecting the sample space associated with an experiment.

(e) Demonstrating mastery of logical-reasoning algorithms by deducing facts of set inclusion or set non-inclusion from a diagram.

(f) Demonstrating understanding of arithmetic concepts by all of the following skills:

1. Recognizing the meaning of exponents.
2. Recognizing the role of the base number in determining place value in the base-ten numeration system and in systems that are patterned after it.
3. Identifying equivalent forms of positive rational numbers involving decimals, percents, and fractions.
4. Determining the order relation between magnitudes.

(g) Demonstrating understanding of geometric and measurement concepts by all of the following skills:

1. Recognizing horizontal, vertical, parallel, perpendicular, and intersecting lines.
2. Identifying relationships between angle measures.
3. Classifying simple plane figures by recognizing their properties.
4. Recognizing similar triangles and their properties.
5. Identifying appropriate types of measurement for geometric objects.

(h) Demonstrating understanding of algebraic concepts by all of the following skills:

1. Recognizing and using properties of operations.
2. Determining whether a particular number is among the solutions of a given equation or inequality.
3. Recognizing statements and conditions of proportionality and variation.
4. Identifying regions of the coordinate plane which correspond to specified conditions.

(i) Demonstrating understanding of statistical concepts including probability by all of the following skills:

1. Recognizing the normal curve and its properties.
2. Recognizing samples that are representative of a given population.
3. Identifying the probability of a specified outcome in an experiment.

(j) Demonstrating understanding of logical-reasoning concepts by all of the following skills:

1. Identifying simple and compound statements and their negations.
2. Determining equivalence or non-equivalence of statements.
3. Drawing logical conclusions from data.

4. Recognizing that an argument may not be valid even though its conclusion is true.
5. Distinguishing fallacious arguments from non-fallacious ones.
6. Recognizing proof by contradiction.

(k) Demonstrating understanding of computer-technology concepts by all of the following skills:

1. Identifying characteristics of tasks which computers perform well.
2. Identifying the human functions necessary to utilize computers.
3. Identifying possible abuses of computer use.

(l) Generalizing and selecting applicable generalizations in arithmetic by both of the following skills:

1. Inferring relations between numbers in general by examining particular number pairs.
2. Selecting applicable properties for performing arithmetic calculations.

(m) Generalizing and selecting applicable generalizations in geometry and measurement by both of the following skills:

1. Inferring formulas for measuring geometric figures.
2. Selecting applicable formulas for computing measures of geometric figures.

(n) Generalizing and selecting applicable generalizations in algebra by both of the following skills:

1. Inferring relations among variables.
2. Selecting applicable properties for solving equations and inequalities.

(o) Generalizing and selecting applicable generalization in statistics, including probability, by inferring relations and making accurate predictions from studying particular cases.

(p) Generalizing and selecting applicable generalizations in logical reasoning by both of the following skills:

1. Inferring valid reasoning patterns and expressing them with variables.
2. Selecting applicable rules for transforming statements without affecting their meaning.

(q) Demonstrating proficiency for solving problems in the area of arithmetic by both of the following skills:

1. Solving real-world problems which do not require the use of variables.
2. Solving problems that involve the structure and logic of arithmetic.

(r) Demonstrating proficiency for solving problems in the area of geometry and measurement by both the following skills:

1. Solving real-world problems involving perimeters, areas, volumes of geometric figures.
2. Solving real-world problems involving the Pythagorean property.

(s) Demonstrating proficiency for solving problems in the area of algebra by both of the following skills:

1. Solving real-world problems involving the use of variables, aside from commonly used geometric formulas.
2. Solving problems that involve the structure and logic of algebra.

(t) Demonstrating proficiency for solving problems in the area of statistics, including probability for both of the following skills:

1. Solving real-world problems involving the normal curve.
2. Solving real-world problems involving probabilities.

(u) Demonstrating awareness of the ways in which logical reasoning is used to solve problems by drawing logical conclusions when facts warrant them.

(3) The Articulation Cooordinating Committee shall file with the Commissioner and the State Board, on or before November 30 of each odd numbered year, its recommendations for changes, if any, in the above definitions of college-level communication and computation skills.

Specific Authority 229.053(1)(2)(d) FS. Law Implemented 229.053 (2)(d), 229.551 (3)(g) FS. History - New 9-3-81, Amended 5-25-82.

6A-10.311 Assessment of Student Attainment of College-Level Communication and Computation Skills.

(1) The skills in Rule 6A-10.31, FAC, shall be used by the Articulation Coordinating Committee as the basis for the development of specifications for test items.

(2) The specifications shall be used by the Articulation Coordinating Committee as the basis for the development of tests and other assessment procedures to measure the level of student attainment of the skills.

(3) The College-Level Academic Skills Test, an achievement test developed by the Department pursuant to Section 229.551 (3)(h), Florida Statutes, to measure the level of attainment of college-level communication and computation skills listed in Rule 6A-10.31, FAC, is approved and designated for use in community colleges and state universities for the purposes specified in Sections 240.319(3)(c) and 240.325(3), Florida Statutes and Sections 4, 5, and 6 of Chapter 82-180, Laws of Florida.

(4) A person required to take the College-Level Academic Skills Test who has a record of physiological disorder(s) which substantially impairs that person's visual, auditory, manual or speaking abilities or who has a record of a learning disability shall be deemed to have satisfied any requirement to present a score on any subtest which has not been modified in administration so as best to ensure that the performance of the person on the subtest accurately reflects the person's achievement of the skill being measured, rather than the person's impaired abilities. The test modifications may include but are not limited to the following:

(a) Flexible scheduling. The person may be administered a subtest during several brief sessions, so long as all testing is completed on the test administration date.

(b) Flexible setting. The person may be administered a subtest individually or in a small group setting by a proctor rather than in a classroom or auditorium setting.

(c) Recording of answers. The person may mark answers in a test booklet, type the answers by machine, or indicate selected answers to a test proctor. The proctor may then transcribe the person's responses onto a machine-scorable answer sheet.

(d) Revised format. The person may use a large print booklet, a Braille test booklet, or a magnifying device.

(e) Auditory aids. The person may use audio devices. A tape recorded version of appropriate portions of the test may be used, along with a printed copy. Appropriate portions of the test may be read to the student by a narrator.

6A-10.312 Minimum standards of college-level communication and computation skills.

(1) The Commissioner shall approve procedures for establishing uniform standards of performance on the College-Level Academic Skills test and recommend the levels of attainment of the communication and computation skills included in Rule 6A-10.31, FAC, that are to be required of students to satisfy the standards of the State Board, which levels of attainment, when approved by the State Board, shall constitute the minimum standards of college-level communication and computation skills of the State Board.

(2) The Commissioner shall recommend changes in the minimum standards to adjust to changes in the level of attainment of communication and computation skills being achieved by students in community colleges and state universities and to changes in the definition of the college-level skills included in Rule 6A-10.31, FAC.

Specific Authority 229.053(1)(2)(d) FS. Law Implemented 229.053 (2)(d), 240.233(5) FS., Sections 3 and 4 of Chapter 82-180, Laws of Florida. History - New 9-3-81, Amended 9-29-82.

6A-10.313 College-Level communication and computation skills in community colleges.

(1) The communication and computation skills included in Rule 6A-10.31, FAC, shall be taken into consideration by the respective district boards of trustees in the establishment of student performance standards for the awarding of associate degrees. No associate of arts degree shall be awarded after the October, 1982 administration of the College-Level Academic Skills Test to students who do not present scores earned on that test or who do not satisfy the requirements of Rule 6A-10.311(4), FAC. Effective August 1, 1984, student scores earned on that test must satisfy the minimum standards of the State Board.

(2) For purposes specified in Section 240.319(3)(q), Florida Statutes, each district board of trustees shall define the levels of attainment of the communication and computation skills defined in Rule 6A-10.31, FAC, which are associated with successful performance in college-credit programs in the respective community colleges.

...

(4) The respective district boards of trustees shall assure that all students in college-credit programs have the opportunity to acquire the skills included in Rule 6A-10.31, FAC.

(5) Prior to August 1, 1984, use made of student scores on the College-Level Academic Skills Test by a community college shall be limited to establishing eligibility for the award of an associate of arts degree, student counseling, and curriculum improvements. Prior to August 1, 1984, the level of scores earned on College-Level Academic Skills Test shall not be used in any way to deny a student an associate of arts degree.
Specific Authority 229.053 (1)(2)(d) FS. Law Implemented 229.053(2)(d), 240.319(3)(c)(p)(q)(r) FS., Sections 4 and 6 of Chapter 82-180, Laws of Florida. History - New 9-3-81, Amended 10-7-82.

6A-10.314 College-Level communication and computation skills in state universities.

(1) The communication and computation skills included in Rule 6A-10.31, FAC, shall be taken into account by each state university awarding an associate of arts degree in the establishment of student performance standards for the award of that degree; provided, however, that no associate of arts degrees shall be awarded after the October 1982 administration of the College-Level Academic Skills Test to students who do not present scores earned on that test; and provided, further, that beginning August 1, 1984, student scores on that test must satisfy the minimum standards of the State Board.

...

(3) Each state university with a lower division shall assure that all students in college-credit programs have opportunity to acquire the skills included in Rule 6A-10.31, FAC.

(4) Except as provided in Rule 6A-10.314(5), FAC, beginning with the October 1982 administration of the College-Level Academic Skills Test, each state university shall require all applicants for upper division status, including students who were admitted to the university as freshmen or sophomores, to present scores which have been earned on the College-Level Academic Skills Test; and for any term beginning on or after August 1, 1984, the admission of all students to upper division status shall require presentation of scores on the College-Level Academic Skills which satisfy the minimum standards of the State Board.

(5) Students required to present scores on the College-Level Academic Skills Test who have not had opportunity to take the test may be enrolled in a state university provided that the period of such enrollment does not extend beyond the end of the semester during which the test is next administered. Students who have not had opportunity to take the test shall include students who were awarded an associate of arts degree from a public community college in Florida prior to October 1982, students who are transferring to a state university from an institution at which the test is not administered, and students who were prevented for medical or religious reasons from taking the test when it was administered.

(6) Prior to August 1, 1984, use made of student scores on the College-Level Academic Skills Test by any state university shall be limited to establishing eligibility for admission to upper division status, student counseling, and curriculum improvement. Prior to August 1, 1984, the level of scores earned on College-Level Academic Skills Test shall not be used in any way to deny a student an associate of arts degree, admission to upper division status or admission to any upper division program.
Specific Authority 229.053 (1)(2)(d) FS. Law Implemented 229.053 (2)(d), 240.233(5) FS., Sections 3, 4, and 5, Chapter 82-180, Laws of Florida. History - New 9-3-81, Amended 10-7-82.

APPENDIX C

COLLEGE-LEVEL ACADEMIC SKILLS TEST

Skills Included in 1982-83 Forms

COMMUNICATION SKILLS

I. READING

A. Reading with literal comprehension includes all of the following skills:

1. Recognizing main ideas in a given passage
2. Identifying supporting details
3. Determining meaning of words on the basis of context

B. Reading with critical comprehension includes all of the following skills:

1. Recognizing the author's purpose
2. Distinguishing between statement of fact and statement of opinion
3. Detecting bias
4. Recognizing author's tone
5. Recognizing explicit and implicit relationships within sentences
6. Recognizing explicit and implicit relationships between sentences
7. Recognizing valid arguments
8. Drawing logical inferences and conclusions

II. WRITING

A. Composing units of discourse providing ideas and information suitable for purpose and audience includes all of the following skills:

1. Selecting a subject which lends itself to expository writing
2. Determining the purpose for writing
3. Limiting the subject to a topic which can be developed within the requirements of time, purpose, and audience
4. Formulating a thesis statement which reflects the purpose
5. Developing the thesis statement by all of the following:

   a. Providing adequate support which reflects the ability to distinguish between generalized and concrete evidence
   b. Arranging the main ideas and supporting details in an organizational pattern appropriate to the expository purpose
   c. Writing unified prose in which all supporting material is relevant to the thesis statement
   d. Writing coherent prose, providing effective transitional devices which clearly reflect the organizational pattern and the relationships of the parts

B. Transmitting ideas and information in effective written language which conforms to the conventions of standard American English includes all of the following skills:

1. Demonstrating effective word choice by all of the following:

   a. Using words which convey the denotative and connotative meanings required by context
   b. Avoiding slang, jargon, cliches, and pretentious expressions
   c. Avoiding wordiness

2. Employing conventional sentence structure by all of the following:

   a. Placing modifiers correctly
   b. Coordinating and subordinating sentence elements according to their relative importance
   c. Using parallel expressions for parallel ideas
   d. Avoiding fragments, comma splices, and fused sentences

3. Employing effective sentence structure by all of the following:

   a. Using a variety of sentence patterns
   b. Avoiding unnecessary use of passive construction
   c. Avoiding awkward constructions

4. Observing the conventions of standard American English grammar and usage by all of the following:

   a. Using standard verb forms
   b. Maintaining agreement between subject and verb, pronoun and antecedent
   c. Using proper case forms
   d. Maintaining a consistent point of view

5. Using standard practice for spelling, punctuation, and capitalization

6. Revising, editing, and proofreading units of written discourse to assure clarity, consistency, and conformity to the conventions of standard American English

COMPUTATION SKILLS

I. ALGORITHMS

A. Demonstrating mastery of all of the following arithmetic algorithms:

1. Adding, subtracting, multiplying, and dividing positive rational numbers
2. Adding, subtracting, multiplying, and dividing positive rational numbers in decimal form

B. Demonstrating mastery of all of the following geometric and measurement algorithms:

1. Rounding measurements to the nearest given unit of the measuring device used
2. Calculating distances, areas, and volumes including English-metric conversions when given the conversion units

C. Demonstrating mastery of all of the following algebraic algorithms:

1. Adding, subtracting, multiplying, and dividing real numbers
2. Applying the order-of-operations agreement to computations involving numbers and variables
3. Using scientific notation in calculations involving very large or very small measurements
4. Solving linear equations and inequalities
5. Using given formulas to compute results, when geometric measurements are not involved

D. Demonstrating mastery of all of the following statistical algorithms, including some from probability:

1. Identifying information contained in bar, line, and circle graphs
2. Determining the mean, median, and mode of a set of numbers
3. Selecting the sample space associated with an experiment

E. Demonstrating mastery of logical-reasoning algorithms by deducing facts of set inclusion or set non-inclusion from a diagram.

II. CONCEPTS

A. Demonstrating understanding of arithmetic concepts by all of the following skills:

1. Recognizing the meaning of exponents
2. Recognizing the role of the base number in determining place value in the base-ten numeration system and in systems that are patterned after it
3. Identifying equivalent forms of positive rational numbers involving decimals, percents, and fractions
4. Determining the order relation between magnitudes

B. Demonstrating understanding of geometric and measurement concepts by all of the following skills:

1. Recognizing horizontal, vertical, parallel, perpendicular, and intersecting lines
2. Identifying relationships between angle measures
3. Classifying simple plane figures by recognizing their properties

4. Recognizing similar triangles and their properties
5. Identifying appropriate types of measurement for geometric objects

C. Demonstrating understanding of algebraic concepts by all of the following skills:

1. Recognizing and using properties of operations
2. Determining whether a particular number is among the solutions of a given equation or equality
3. Recognizing statements and conditions of proportionality and variation
4. Identifying regions of the coordinate plane which correspond to specified conditions

D. Demonstrating understanding of statistical concepts including probability by all of the following skills:

1. Recognizing the normal curve and its properties
2. Recognizing samples that are representative of a given population
3. Identifying the probability of a specified outcome in an experiment

E. Demonstrating understanding of logical-reasoning concepts by all of the following skills:

1. Identifying simple and compound statements and their negations
2. Determining equivalence or nonequivalence of statements
3. Drawing logical conclusions from data
4. Recognizing that an argument may not be valid even though its conclusion is true
5. Distinguishing fallacious arguments from non-fallacious ones
6. Recognizing proof by contradiction

F. Demonstrating understanding of computer-technology concepts by all of the following skills:

1. Identifying characteristics of tasks which computers perform well
2. Identifying the human functions necessary to utilize computers
3. Identifying possible abuses of computer use

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APPENDIX E

CLAST Item Review Form

Computation Items

Content and Measurement Review

_____Skill

____Item Number

_____Needs no revision

_____Needs revision

_____Totally unacceptable

1.	Does the item conform to the specifications in content and format?	yes	no	?	
	Directions?	yes	no	?	
	Stimulus?	yes	no	?	
	Options?	yes	no	?	
2.	Does the item measure the specified skill?	yes	no	?	
3.	Is the level of difficulty appropriate?	yes	no	?	
4.	Are the directions clear, concise and complete?	yes	no	?	
5.	Is the item clear?	yes	no	?	
6.	Does the item conform to standard grammar and usage?	yes	no	?	
7.	Does the item follow mechanical conventions (punctuation, capitalization, spelling)?	yes	no	?	
8.	Is the item independent of other items?	yes	no	?	
9.	Is the question easily related to the diagram provided (if applicable)?	yes	no	?	NA
10.	Is the diagram clear and appropriate (if applicable)?	yes	no	?	NA
11.	Are the options				
	logically ordered?	yes	no	?	
	syntactically alike?	yes	no	?	
	logically parallel?	yes	no	?	
	approximately the same length?	yes	no	?	

E-2

CLAST Item Review Form

Computation Items

Content and Measurement Review (continued)

12.	Is the item free of unintended clues to the correct answer?	yes	no	?
13.	Is the item free of tricky expressions or options?	yes	no	?
14.	Is the item free of extraneous or confusing material?	yes	no	?
15.	Is the item free of other obvious flaws in construction?	yes	no	?
16.	For items where computation per se is not being assessed: Is the arithmetic computation required of reasonable length and complexity?	yes	no	?
17.	Is the keyed option the correct response?	yes	no	?
18.	Is the keyed option the only correct response?	yes	no	?
19.	Is the correct answer too obvious and too obscure?	yes	no	?
20.	Are the incorrect options good distractors?	yes	no	?

Description of problem(s) and/or suggested revision(s):

E-3

CLAST Item Review Form

Computation Items

Bias Review

_____Item Number

_____Skill

_____Needs no revision

_____Needs revision

_____Totally unacceptable

1. Does the item contain any information that could be seen as offensive to any group? [If "yes" check the group(s) that may be affected.] yes no ?

_____male/female _____socio-economic

_____racial _____regional

_____cultural _____religious

_____ethnic _____handicapped

_____age _____other (_____)

2. Does the item include or imply any stereotypic depiction of any group? yes no ?

_____male/female _____socio-economic

_____racial _____regional

_____cultural _____religious

_____ethnic _____handicapped

_____age _____other (_____)

3. Does the item portray any group as degraded in any way? yes no ?

_____male/female _____socio-economic

_____racial _____regional

_____cultural _____religious

_____ethnic _____handicapped

_____age _____other (_____)

E-4

CLAST Item Review Form

Computation Items

Bias Review (continued)

4. Does the item contain clues or information that could be seen to work to the benefit or detriment of any group? yes no ?

_____male/female _____socio-economic

_____racial _____regional

_____cultural _____religious

_____ethnic _____handicapped

_____age _____other (_____)

5. Does the item contain any group-specific language or vocabulary (e.g., culture-related expressions, slang, or expressions that may be unfamiliar to examinees of either sex or of a particular age)? yes no ?

Explanation of any items marked "yes" and suggested revision(s):

E-5

CLAST Item Review Form

Reading Passages

Content Reviewer

_____Passage

_____Needs no revision

_____Needs revision

_____Totally unacceptable

1. Does the reading level of the passage appear to be equivalent to that of a standard college text?	yes	no	?
2. Does the passage conform to the specifications?	yes	no	?
3. Does the passage conform to standard usage (vocabulary, sentence structure, etc.)? If no, but acceptable because of context, please indicate below.	yes	no	?
4. Does the passage follow mechanical conventions (punctuation, capitalization, spelling)?	yes	no	?
5. Is the passage clear (i.e., is free of extraneous or confusing material and is logically organized)?	yes	no	?
6. Does the passage seem suitable for developing items for the skills listed?	yes	no	?

Description of problem(s) and/or suggested revision:

E-6

CLAST Item Review Form

Essay Topics

Content and Measurement Review

_____Topic Number

_____Needs no revision

_____Needs revision

_____Totally unacceptable

1.	Will every examinee be able to respond to the topic?	yes	no	?
2.	Does the topic contain any vocabulary or language likely to be unfamiliar to examinees?	yes	no	?
3.	Does the topic lend itself to expository writing (rather than narrative)?	yes	no	?
4.	Can examinees develop an essay of the required length from the topic?	yes	no	?
5.	Does the topic require the student to have any specialized knowledge or to have had any unique experience?	yes	no	?
6.	Is the topic broad enough to allow for several possible responses?	yes	no	?
7.	Will the topic allow the examinee sufficient opportunity to give evidence of organizational skills (e.g., show relationships between parts, provide supporting details, use effective transitional devices)?	yes	no	?
8.	Will the topic be likely to work to the advantage or detriment of either sex or to any racial, cultural ethnic, socio-economic, regional, religious, age, handicapped, or other group?	yes	no	?

Description of the problem(s) and/or suggested revision(s):

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